Answer Key

Unit 1: Introduction to Paddy Cultivation

Session 1: Importance of Paddy Cultivation

A. Fill in the Blanks

1. staple
2. *Oryza sativa*
3. Golden rice
4. eastern
5. carbohydrate

B. Multiple Choice Questions

1. (c)
2. (b)
3. (a)
4. (a)

C. Match the Columns

1. (c)
2. (e)
3. (d)
4. (a)
5. (b)

Session 2: Climatic Requirements and Paddy Growing Regions

A. Fill in the Blanks

1. tropical
2. four
3. irrigated
4. 5.5 to 6.5.

B. Multiple Choice Questions

1. (d)
2. (c)
3. (d)
4. (a)

C. Match the Columns

1. (b) 2. (c) 3. (a)

Unit 2: Land Preparation and Planting

Session 1: Implements used for Land Preparation and Planting

A. Fill in the Blanks

1. mouldboard
2. sub-surface plough or chisel
3. harrow
4. land levelling

B. Multiple Choice Questions

1. (d)
2. (b)
3. (c)
4. (d)
5. (c)

C. Match the Columns

1. (b)
2. (c)
3. (d)
4. (e)
5. (a)

Session 2: Methods of Planting in Paddy Cultivation

A. Fill in the Blanks

1. Madagascar
2. conoweeder
3. labour intensive
4. SRI
5. 75–80
6. 7-10

B. Multiple Choice Questions

1. (a)
2. (a)
3. (d)
4. (b)
5. (c)

C. Match the Columns

1. (e)
2. (a)
3. (d)
4. (c)
5. (b)

Unit 3: Nursery Preparation and Transportation

Session 1: Types of Nursery and Seed Sowing

A. Fill in the Blanks

1. 600–800m^2
2. dry
3. excess
4. dry soil
5. soaking and incubation

B. Multiple Choice Questions

1. (c)
2. (b)
3. (a)
4. (c)
5. (b)

C. Match the Columns

1. (b)
2. (c)
3. (d)
4. (a)

Session 2: Weeds, Insect–pests and Disease Management in a Paddy Nursery

A. Fill in the Blanks

1. venation
2. nodes, internodes
3. leaves, stems
4. green leafhopper
5. July to September

B. Multiple Choice Questions

1. (a) 2. (c)
3. (d) 4. (c)

C. Match the Columns

1. (c) 2. (a)
3. (b) 4. (e)
5. (d)

Session 3: Packaging and Transportation

A. Fill in the Blanks

1. rainy 2. long
3. hazards 4. 3 to 5

B. Multiple Choice Questions

1. (b) 2. (d)
3. (b)

C. Match the Columns

1. (c) 2. (a)
3. (b)

Unit 4: Growth Stages of Paddy Plant

A. Fill in the Blanks

1. photo period sensitivity 2. panicle
3. reproductive phase 4. photo sensitive

B. Multiple Choice Questions

1. (c) 2. (d)
3. (c) 4. (a)

C. Match the Columns

1. (b) 2. (a)
3. (d) 4. (e)
5. (c)

Unit 5: Intercultural Operations in Paddy

A. Fill in the Blanks

1. Intercultural 2. intercultural equipment
3. direct seeded 4. stale seedbed
5. aeration 6. 20–25

B. Multiple Choice Questions

1. (b) 2. (a)
3. (b) 4. (b)

C. Match the column:

1. (c) 2. (d)
3. (a) 4. (b)

Unit 6: Seed Production

Session 1: Methods of Seed Production

A. Fill in the Blanks

1. reproduction 2. ovule
3. formal and informal 4. 3–5
5. roguing

B. Multiple Choice Questions

1. (d) 2. (b)
3. (d) 4. (a)

C. Match the Columns

1. (c) 2. (d)
3. (b) 4. (a)

Session 2: Improved and Indigenous Rice Varieties in India

A. Fill in the Blanks

1. yielding 2. 2006
3. aroma 4. Indo-Gangetic
5. blast

B. Multiple Choice Questions

1. (b) 2. (b)
3. (a) 4. (c)

C. Match the Columns

1. (c) 2. (d)
3. (b) 4. (a)

Session 3: Traits of Rice Varieties

A. Fill in the Blanks

1. weeds 2. bacterial blight
3. golden rice 4. parboiled rice

B. Multiple Choice Questions

1.(a) 2. (b)
3.(b) 4. (d)

C. Match the Columns

1. (d) 2. (c)
3. (a) 4. (b)

Unit 7: Water Management

Session 1: Water Requirement of Paddy

A. Fill in the Blanks

1. 700–800 2. Critical growth
3. booting 4. 200

B. Multiple Choice Questions

1. (c) 2. (c) 3. (b)

C. Match the Columns

1. (b) 2. (a)
3. (e) 4. (c)
5. (d)

Session 2: Methods of Irrigation

A. Fill in the Blanks

1. paddy
2. 3–4
3. nutrients

B. Multiple Choice Questions

1. (b) 2. (a) 3. (b)

C. Match the Columns

1. (d) 2. (c)
3. (b) 4. (a)

Session 3: Alternate Wetting and Drying, and Water Use Efficiency

A. Fill in the Blanks

1. water 2. depth
3. methane 4. water use efficiency

B. Multiple Choice Questions

1. (d) 2. (a) 3. (a)

C. Match the Columns

1. (d) 2. (e)
3. (a) 4. (c)
5. (b)

Unit 8: Integrated Nutrient Management

Session 1: Soil Sampling and Analysis

A. Fill in the Blanks

1. 15–30
2. 500 gm
3. zigzag
4. more than 9

B. Multiple Choice Questions

1. (a) 2. (d) 3. (c)

C. Match the Columns

1. (c)
2. (d)
3. (a)
4. (b)

Session 2: Nutrient Requirement and its Sources

A. Fill in the Blanks

1. 17
2. primary or macro
3. 50 Kg/ ha
4. green
5. foliar

B. Multiple Choice Questions

1. (b)
2. (b)
3. (d)
4. (a)
5. (b)
6. (d)

C. Match the Columns

1. (c)
2. (d)
3. (a)
4. (b)

Session 3: Methods and Time of Fertiliser Application

A. Fill in the Blanks

1. plough furrow or single placement
2. top dressing
3. 2.5–5 cm
4. foliar application
5. boot leaf

B. Multiple Choice Questions

1. (d)
2. (b)
3. (a)
4. (a)

C. Match the Columns

1. (d)
2. (b)
3. (a)
4. (c)

Session 4: Nutrient Deficiency Symptoms in Paddy

A. Fill in the Blanks

1. Phosphorus
2. Potassium
3. sulphur
4. zinc

B. Multiple Choice Questions

1. (a)
2. (b)
3. (a)
4. (c)

C. Match the Columns

1. (d)
2. (a)
3. (b)
4. (c)

GLOSSARY

Abiotic: *comprises non-living components of the ecosystem, such as sunlight, water, temperature, oxygen, soil and air, etc.*

Adventitious roots: *are the roots that grow from any part of a plant other than the radicle or its branches.*

Aerobic: *refers to things occurring only in the presence of oxygen.*

Anaerobic: *refers to an organism growing without oxygen.*

Agro-ecological zones: *are geographical areas, exhibiting similar climatic conditions that determine their ability to support agriculture.*

Annuals: *are plants that complete their life cycle from seedlings to seed formation within a season or year.*

Anther: *is the part of stamen that contains pollen.*

Awn: *is an extended bristle-like structure, emerging from the lemmas of a floret. Such a structure is found growing from the ear or a flower of barley, rye, etc.*

Biotic: *includes living beings present in the ecosystem, such as plants, animals, human beings, etc.*

Caryopsis: *refers to a dry one-seeded fruit, in which the ovary wall is united with the seed coat, typical of grasses and cereals.*

Coleorhiza: *is a sheath, protecting the root of a germinating grass or grain.*

Coleoptile: *is a sheath, protecting a young shoot tip in grass or cereal.*

Cross-pollination: *refers to pollination of a flower or plant with pollen from another flower or plant.*

Dicot: *commonly known as dicotyledon, a dicot, usually, contains two embryonic leaves in the seed.*

Diploid: *is an organism or cell that has paired chromosomes — one from each parent.*

Draft animals: *are the animals used for carrying heavy loads.*

Ecology: *is the branch of biology that deals with how organisms interact with each other and to their physical surroundings.*

Ecosystem: *refers to a biological community of interacting organisms and their physical environment.*

Endosperm: *is a part of the seed, which serves as food storage for a developing plant embryo. It contains starch, protein and other nutrients.*

Fertilisation: *refers to the union of male and female gametes (reproductive cells) to produce a zygote.*

Field water tube: *is a tube used for passing or holding water in a field.*

Flag leaf: *is the topmost leaf below the panicle.*

Notes

Floret: *is a small flower, which is part of the larger flower.*

Genotype: *refers to the genetic constitution of an individual organism.*

Glume: *refers to each of two membranous bracts surrounding the spikelet of a grass (forming the husk of a cereal grain) or one surrounding the florets of sedge.*

GM seeds: *are seeds that have been modified to contain special characteristics, such as resistance to herbicides, insect–pests, etc.*

Harrow: *is a farm implement used to pulverise soil, break up crop residues, uproot weeds and cover seeds.*

Herbicide: *is a substance that is toxic to plants and is used to destroy unwanted vegetation.*

Hybrid: *refers to an offspring, resulting from cross-breeding in a crop. A progeny grows faster, produces more yield and resists stress better than its parents.*

Inflorescence: *refers to the arrangement of flowers on a plant.*

Isogenic: *are organisms having same or closely similar genotypes, or characterised by essentially identical genes.*

Leaf blade: *refers to the leaf of grass or the broad portion of a leaf as distinct from petiole.*

Leaf sheaths: *are structures at the base of a leaf's petiole that partly surround or protect the stem or another organ that it subtends.*

Lowland: *refers to a method of paddy cultivation, where the soil is submerged for a part or the entire growing season. Lowland paddy can be irrigated or rain-fed and, typically, involves puddling of the soil.*

Monoculture: *refers to the cultivation of a single crop in a given area.*

Monocot: *commonly known as 'monocotyledon', monocot is a flowering plant, whose seeds, typically, contain only one embryonic leaf or cotyledon.*

Morphology: *also called plant morphology or phytomorphology, it is the scientific study of the structure and form of plants.*

Mulch: *is a protective layer, consisting of bark chips, straw or plastic sheeting, placed on the ground around plants to suppress weed growth, retain soil moisture and prevent freezing of roots.*

Nodes: *are the parts of a plant stem from where flowers, branches and leaves first start growing. Nodes can hold several leaves and buds that can grow and spread into the branches.*

Off-type: *is a plant that differs in one or more traits, such as height, colour, flower, etc., from a cultivar. Off-type plants are, generally, identified on the basis of their phenotypes.*

Panicle: *is a loose branching cluster of flowers like in oats.*

Pedicel: *is a small stalk, bearing an individual flower in an inflorescence.*

Photo period: *refers to specific day and night temperature a plant needs to enter various life cycle stages, especially, flowering.*

Pollination: *is the process of transfer of pollen grains from the male anther of a flower to the female stigma.*

Pollen: *is a fine powdery substance, typically, yellow in colour, and consists of microscopic grains discharged from the male part of a flower.*

Planking: *is a process that is done to crush hard clods to level the soil surface and compact the soil lightly.*

Plough: *is an implement used to turn and break clods into the soil, bury crop residues and check weed population.*

Pistil: *is the female organ of a flower, comprising stigma, style and ovary.*

Puddling: *refers to breaking down soil aggregates and bringing it to fine tilth by applying mechanical force to the soil. It is, generally, carried out in soil having high moisture content.*

Pulverise: *means reducing soil to fine particles.*

Rain-fed crop production: *refers to crop production that relies on natural rain rather than irrigation.*

Ruminants: *are animals who acquire nutrients from plant-based food by fermenting it in a specialised stomach prior to digestion through microbial actions and chew it again, for example cows, sheep, deer, etc.*

Radicle: *is the part of a plant embryo that develops into the primary root.*

Seed: *is an embryonic plant enclosed in a protective outer covering. It is the product of ripened ovule, after fertilisation.*

Seed rate: *is the quantity of seeds required for planting per hectare area. The seeding rate is expressed by the number of germinating seeds (millions) and their weight (kg).*

Sheath pulvinus: *refers to swelling at the base of a leaf sheath, just above the node. The swelling at panicle axis, where the branches are borne, is called 'panicle pulvinus'.*

Self-pollination: *refers to pollination of a flower by pollen from the same flower or from another flower on the same plant.*

Senescence: *is the condition or process of deterioration with age.*

Stamen: *is the male fertilising organ of a flower. It produces pollen. It consists of two parts — anther and filament.*

Submontane region: *refers to the region situated in the foothills or lower slopes of a mountain range.*

Notes

Tillage: *refers to the mechanical manipulation of soil to provide a favourable environment for germination of seeds and crop.*

Tiller: *is a lateral shoot emerging from the base of a stem of a plant, especially in grass or cereal.*

Tillering: *refers to the production of side shoots.*

Transplanting: *refers to moving or transferring a plant from nursery to the main field.*

Tropical regions: *are the regions near the equator.*

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